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ENTOMOLOGICAL NEWS

VOL. LXVIII FEBRUARY, 1957 No. 2

How Much do You Pay for Your Fun?

By MAURICE E. PHILLIPS

This may seem a light subject for the *News,* but a very serious matter is involved. Pure scientific research, so-called, has always been considered by its devotees as an inviolable field—akin to a man's religion. It is the fiber of which our journals are made.

Of those who contribute papers to such periodicals a question might be asked: why did you become an entomologist, a botanist, an ichthyologist? That you are definitely characterized in moving pictures and on television as something of a freak, and as a harmless screw-ball by the public at large must mildly fret you at times. But I now ask this question and invite you to join me in seeking an answer.

For our present purposes it will do you no good unless you seriously indulge for a time in a little introspection; forget the standard answers and get down to brass tacks—why *did* you? There must be good reasons, worth-while compensations.

There are several fairly obvious possible replies to the question we have asked. Could the answer lie in the field of our personal economics—do we expect to get rich at it? This seems hardly likely. The number of pure research scientists who amass a fortune by their endeavours is small indeed. They usually make an adequate living, but I know many who draw a smaller wage than a first-class union plasterer. The average young research scientist just starting his career, has spent seven or eight expensive years of his time and effort in college—he is an intelligent young man or he would not be where he is today.

With his natural talents and the same amount of time spent in business training, he could go places in the business world. Money, therefore, seems hardly the answer.

Could it be that there are involved here various aspects of nobility and self-sacrifice? Are we throwing our considerable talents into the pot for the uplift of mankind—for sweet charity's sake? In many years' association with universities and research institutions, I have known hundreds of research scientists. On the whole they are as fine a group of people as you can find anywhere. They don't beat their wives, they love their children, they go to the polls, and they come as near living by the Golden Rule as any segment of society you are apt to examine. But I have never observed in them any very obvious force driving toward humanitarian uplift. They know, of course, that a project on which they are working, and which may have no apparent practical value, may some day turn out to have one, but it would be gambling their time to assume it—and they are not a race of gamblers.

What do we have left then? It may be heresy even to think it, but the most apparent answers are: fun and glory. These may seem cynical answers, but they are human; they may suggest clay feet, but who can cast stones at clay feet? There can be no question but the research scientist looks with high approval at his name on papers—with more approval yet if it is on many papers. I do not condemn this; I have felt the tug myself. The number of his readers will not be large—his works are not best sellers, but the approval of his fellow scientists is one of life's sweetest treasures.

But the big pay-off for the research scientist is *fun*—he really has it. Many of the world's greatest have no hobbies but their work. They live and breathe it; they eat with it; they take it home in brief cases, satchels and bags; when not doing it they talk about it most of their waking time. They would be very unhappy and neurotic if their fathers had insisted they be mechanics. Some have never learned how to dance, it is a waste of time to go to the movies; anyway they are having too good a time with their research—it *is* their recreation, their amusement. If you have never been one you will never know the

pull of the unknown, the lift from finding out, and adding to the "sum-total of human knowledge." If you *are* one of these lucky people, how much are *you* paying for your fun? The budget experts concede that it is just and proper to expend at least 5% of your income for amusement and recreation.

It is unquestionable that a tradition has grown up that after a scientist has devoted his skills to doing a piece of research, it is his just due that it be published at no cost to him. This, even though a mass of such published work may immeasurably increase his scientific stature and, to a considerable extent his salary.

Entomological News is one of the many journals, which as the organ of an independent society, is feeling the pinch in the matter of imposing no amusement tax on its authors. An analysis of the 1956 volume, exclusive of the December issue, reveals that of the general papers on taxonomy, ecology, morphology, life histories, etc., eight were by members of the Society, and contained a total of approximately 29 pages. Forty papers by 36 authors—with a total of 166 pages—are by authors who are *not* members, and who consequently contributed nothing except the minor cost of engraving to the operation and maintenance of the *News*. That is, the strictly scientific material was made up of approximately 15% member papers, and 85% non-member. Who paid the bill? It has largely been paid over the years by resident members, in time and work, and in financial contributions to permanent funds. The drudgery of editorial work has been donated; the building up of what permanent funds there are has been a long, slow arduous task, but with increasing costs these are not now enough.

If your name has appeared often as an author over a period of years, the Society may have put up some thousands of dollars for you. If authors paid one-fourth of the cost of printing their papers, the *News* would again be in the black. It is as simple as that. How much are *you* paying for your fun?

Any donation you might care to make toward the expenses of publishing the News will be gratefully received. It should

be addressed to the AMERICAN ENTOMOLOGICAL SOCIETY, 1900 Race St., Philadelphia 3, Pa. You may designate its use for either the permanent funds or for the relief of the present shortage.

Have you joined the Society?

Diptera (Calliphoridae, Heleidae and Chloropidae) Collected from Birds' Nests at London, Ontario

By W. W. JUDD, Department of Zoology, University of Western Ontario, London, Ontario

In an earlier communication (Judd, 1954) a report was presented on insects collected and reared from nests of birds in the vicinity of London, Ontario during 1951–1953. These studies were continued in 1955 and among the insects collected were several flies which were kindly identified by two taxonomists of the United States National Museum, C. W. Sabrosky (Calliphoridae and Chloropidae) and W. W. Wirth (Heleidae).

Calliphoridae

Many blowfly larvae were collected from nests when these nests were examined on the day that the last of the young birds left each nest. The larvae were put into jars with part of the fabric and debris from the nest; and as the adult flies emerged they were pinned and the dates of their emergence were recorded.

Protocalliphora sp. (**sialia** S. and D.?):

All the blowflies reared were identified as *Protocalliphora*, probably *sialia* S. and D., but Mr. Sabrosky pointed out (*in lit.*) that they represent a complex of species still requiring revision. The larvae were taken from three nests of robins (*Turdus migratorius*) and one of a brown thrasher (*Toxostoma rufum*).

1. Robin—This nest, in the crotch of a Manitoba maple, con-

tained four young birds on May 16. One bird was gone on May 18 and two others departed on May 20, leaving the fourth bird dead in the nest. The nest yielded 54 larvae. Twenty-seven flies were reared: 3—June 3; 15—June 4; 7—June 5; 2—June 6.

2. Robin—This nest, in a bush of twin honeysuckle, contained two eggs on May 12, three on May 13 and four on May 14. There were four young birds on May 27 and they left the nest on June 6, when 40 larvae were collected. Only three flies emerged: June 20.

3. Robin—This nest, in a grape vine twining through an apple tree, contained one egg on May 30, and two eggs on June 7. Two young birds were present on June 14 and they departed on June 23, when 8 larvae were found in the fabric of the nest. Seven flies emerged on July 4.

4. Brown Thrasher—This nest, in a bush of twin honey suckle, contained one egg on May 11, two on May 12, three on May 13, four on May 14 and five on May 17. Four eggs hatched on May 27 and the fifth on a later date, and the five young birds left the nest on June 7, when 4 larvae were found in it. Three flies emerged on June 21 and a fourth on June 22.

The 41 flies are retained in the U.S.N.M. *Protocalliphora* sp. (near *sialia* S. and D.) was reared at London in 1952 from nests of the red-winged blackbird (Judd, 1954).

Heleidae

Culicoides travisi Vargas:

A nest of a catbird (*Dumetella carolinensis*), in a barberry bush, contained three catbird eggs and one cowbird egg on May 30. The cowbird egg was missing on June 7. The last of the young catbirds left the nest on June 23, when a female *C. travisi* was found in the fabric of the nest. The specimen is retained in the U.S.N.M. Flies of the genus *Culicoides* have previously been reported in nests of crows in Montana (Jellison and Philip, 1933) and in the nest of a catbird at London (Judd, 1954). In the latter case the flies were engorged with blood.

Chloropidae

Oscinella luteiceps Sabrosky:

A nest of a catbird, in a bush of black-berried elder, was complete on May 23. Four eggs were laid in it successively on May 27, 28, 29 and 30. Two birds hatched on June 11, a third on June 12 and the fourth on June 13. All four birds left the nest on June 23, when one fly, *O. luteiceps,* was found in it. The specimen is deposited in the collection of the Department of Zoology, University of Western Ontario. One of the paratypes from which this species was described was collected at London (Sabrosky, 1940).

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Distribution of Dermacentor variabilis (Say), the American Dog Tick, in New Hampshire

By R. L. BLICKLE and J. G. CONKLIN [1]

The published records for the distribution of *Dermacentor variabilis* (Say) for New Hampshire as are follows: Bishopp and Smith (1936), Bishopp and Smith (1938), Bishopp and Tremblay (1945), and Smith *et al.* (1946) for the central and southwestern part of the state, all based on collections of the Bureau of Entomology and Plant Quarantine made in 1936. Bequaert (1947) published a record for Ossipee, a town in the east central part of the state.

Recent collecting and a study of the records in the collection of the University of New Hampshire show *D. variabilis* to be well established in at least nine towns. There are additional records for ten other towns. However, the data is such that,

[1] Published as Scientific Contribution No. 189 of the New Hampshire Agricultural Experiment Station.

for the present, these are considered to be stray collections rather than established foci.

The following areas are considered to have established foci of tick infestations. These records are in addition to the ones published by the above authors. Central area: Moultonboro (April 8 to June 20, with tick drag) (18 July, 1949, on fox, D. L. Collins coll.); Sandwich (April 19 to May 20, on dogs); Tuftonboro (May 25, with tick drag); Wolfeboro (May, on man); New Durham (May to July, on man); Center Harbor (18 July 1949, with tick drag, D. L. Collins coll.); Ossipee (May 30, on man); southern and southeastern area: Dover (May and June, on dogs); Amherst (July, with tick drag).

Four towns from which ticks have been recorded, namely, Conway, Eaton, Freedom, and Barnstead, probably have established infestations since they border the central area. The six towns from which ticks have been recorded but are not considered to have established foci are Concord, Dublin, Jaffrey, Laconia, Lancaster, and Sutton.

The main area of infestation is in the central and east central part of the state. This area is bounded by Lake Winnipesaukee on the west and extends eastwardly into Maine. In the past twenty years, from 1936 to 1956, the infested area has increased from approximately 100 square miles to an area of at least 400 square miles. Throughout this area the ticks are confined to the grassy areas, or to the low vegetation and pine woods adjacent to the grassy area. If the infested area in Maine is included the total infested area would be approximately 1000 square miles and would extend to Lake Sebago.

The infestation is quite heavy in some parts, notably along Shannon Brook and along parts of the lake shore in the towns of Moultonboro and Tuftonboro. In May 1952 the above areas showed a population of one tick per square yard when a tick drag was used for sampling. However, most of the samples taken in other localities showed a considerably smaller population.

How and when the infestation in Moultonboro and Tuftonboro started is rather obscure. The local inhabitants claim,

probably through prejudice, that a certain individual brought the ticks in when he pastured sheep on the land. This so-called introduction of ticks occurred approximately thirty years ago. It may be that the increase of ticks coincided with the introduction of sheep and the residents associated the two occurrences. Smith *et al.* (1946) state, "A small area of infestation occurs around Lake Winnipesaukee, N. H., with indications that in certain localities it has persisted there for at least several decades. In other localities the infestation is apparently recent, and may have been caused by the transportation of infested dogs by vacationists."

The infestation in the town of Amherst is of recent origin, and was started, presumably, by the introduction of ticks on dogs. This infestation is confined to two or three farms. A family living in this area traveled, frequently, between Cape Cod, Mass., and the farm in question. The family dogs were carried back and forth on these occasions. There is no history of ticks previous to the family's moving into the area, and since the infestation is limited to this and adjoining properties, it seems safe to assume that the infestation was started in this manner.

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The Immature Stages and Female of Polypedilum (Polypedilum) obtusum Townes (Tendipedidae: Diptera)

By James E. Sublette, Northwestern State College, Natchitoches, Louisiana

Several adult male and female midges were reared from mature larvae collected in Little Bayou Pierre, a small, clear, sandstone-rubble bottomed stream of the Kasatchie Wold in West-Central Louisiana. The adult males agreed with Townes' (1945) description in all respects except size. Measurement of seven specimens gave: mean wing length, 1.73 mm.; standard deviation, .55 mm.; range, 1.6–2.1 mm.; mean leg ratio, 1.68; range, 1.37–1.93; the antennal ratio, 1.95 (mean of two specimens only). Townes lists these measurements for this species as: wing, 2.2 mm. long; leg ratio, 1.75; and antennal ratio, 2.0. Although a size difference exists, *P. obtusum* has such distinctive male genitalia that there can be no doubt as to the identity of these specimens. Eight females having the same identical immature stages as the males of *P. obtusum* were reared from the same material and undoubtably belong to that species.

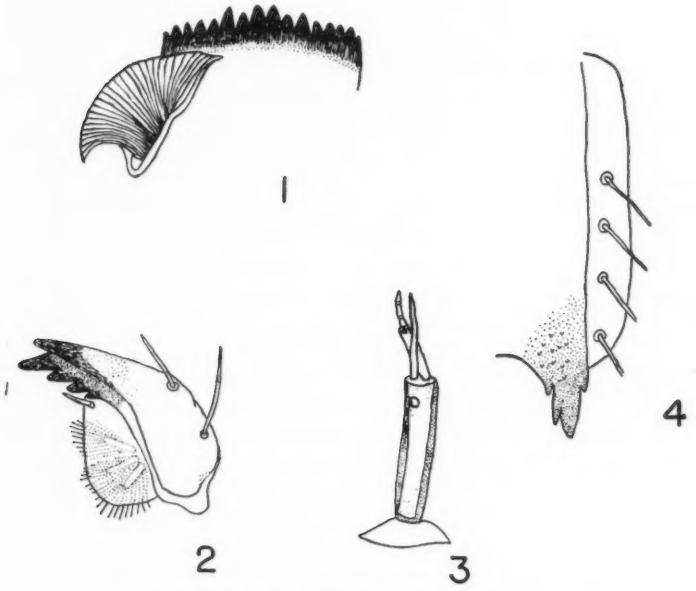
Female. Coloration and general body features same as male except that abdomen of female has a definite light green color instead of a very faint green color. Mean wing length, 1.8 mm.; standard deviation, .34 mm.; range, 1.4–2.4 mm.; mean leg ratio, 1.83; range, 1.67–1.96.

Larva. Total length (mean of two mature specimens), 5.4 mm.; head length, .45 mm. Color, pale yellowish-green; head capsule, very lightly colored with only tips of mandibles, labial plate and ventral part of occipital area darkened. Labial plate (Figure 1) very closely resembles that of *P. convictum* (Walker) as illustrated by Johannsen (Plate V, Figure 76, 1937). Paralabial plates (Figure 1), finely pointed at both ends, with about 28–30 coarse striae. Posterior margin of paralabial plate very strongly arched, apparently more so than other

described species of this genus. Antennal ratio, 56:20:5:6:5. Antennae slightly longer than mandibles and have a mean ratio of 21:22. Antennal blade reaches tip of fifth segment or very slightly exceeds it (Figure 3). Mandibles (Figure 2) are blackened at tips with usual preapical comb and compound brush; accessory tooth of mandible reaches tip of first free tooth; basal tooth fused with distal end of the mesial shelf of mandible. Epipharyngeal comb has 13 teeth arranged in three groups, a central group bearing 3 teeth and two lateral groups with 5 teeth each. Lateral to epipharyngeal comb are about 6 long slender blades; posterior ventral surface of labrum bears broad median pectinate blade which is rounded on free border; anteriorly, two pairs of socketed pectinate blades, most anterior pair being smaller; lateral, inferior surface of labrum with 5 heavy curved pectinate bristles on each side. Premandibles with tips bifid and darkened. Maxillary palpus inconspicuous, 3 segmented; basal segment slightly longer than remaining two; basal segment bears about 5 blades at apex. The rather small rounded eye spots (diameter about one third the length of the mandible) are contiguous. Anterior prolegs are composed of two dense tufts of long slender claws; posterior prolegs are short and terminate in a group of pale hooked claws. Each preanal papilla bears 8 bristles; on anterior surface is a bristle. Two anal gills, about half as long as prolegs, each constricted and tapering beyond middle; anterior to gills are two strong bristles.

Pupa. Total length (mean of two specimens), 4.4 mm.; respiratory organs not clearly discernible on mounted slides. Second abdominal tergite with anterior, inconspicuous band of erect denticles, posterior margin with up to 30 dorsally turned black hooks; segments 3–6 with distinct anterior and posterior bands of suberect, barbed denticles, the anterior and posterior bands being broadly joined along the mid-dorsal line by a broad, fenestrated band of the same denticles. Segments 7 and 8 with a greatly reduced anterior band only. Lateral margin of segment 5 and 6 with 3 lateral bristles; segment 7 with 4 bristles, the anterior 2 broadly separated from the posterior 2; eighth

segment also with 4 bristles, most anterior one being scarcely beyond middle (Figure 4). Posterior lateral spur of segment 8 as in Figure 4; basal denticles, frequently obscured. Swim fin with 60–70 bristles.



Polypedilum (*Polypedilum*) *obtusum* Townes

FIG. 1. Labial and paralabial plates of larva.
FIG. 2. Mandible of larva (preapical brush omitted).
FIG. 3. Antenna of larva.
FIG. 4. Posterior lateral corner of segment eight of the pupa showing spur and lateral fringe.

Polypedilum obtusum very closely resembles the description of *P. convictum* in all of its life stages. As I have not had the opportunity of studying immature stages of *P. convictum* I am not certain that the larvae of the two can be separated unless size and the greatly arched posterior margin of the paralabial

plate are diagnostic. The pupae can be separated on the basis of two characters: tergal armature and features of the posterior-lateral spur of segment 8. The females do not appear to have any diagnostic features which will separate them from other members of the *convictum* group.

The occurrence of *Polypedilum obtusum* in Louisiana represents a new state record and a considerable extension of range as the species has been previously reported only from New York and Michigan (Townes, 1945).

The illustrations were prepared by microprojection. I gratefully acknowledge the assistance of my wife, Mary Smith Sublette, in the preparation of those illustrations.

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Nomenclature Notice

All comments relating to the following should be marked with the Commission's File Number, and sent to Francis Hemming, 28 Park Village East, Regent's Park, London N. W. 1, England.

Pieridae Duponchel, 1832, validation of family-group name (Class Insecta, Order Lepidoptera). File: Z.N. (S.) 289. For details see Bull. Zool. Nomencl. Vol. 12, Part 11.

Two Early Entomological Collectors in Colorado

By F. M. Brown, Fountain Valley School, Colorado Springs

While engaged upon a search for the source of W. H. Edwards' Kansan co-type of *Coenonympha ochracea* I have unearthed information that may be of assistance to others who are interested in material collected during 1858–1863 in what is now the state of Colorado. First let me review some of the history of the area. During the period under consideration the region around Denver and Colorado Springs, Colorado, was first a part of Kansas Territory and then part of Colorado Territory. During the time it was part of Kansas Territory the western boundary of that Territory was the Continental Divide. When the Colorado Territory was established in February 1861 the western boundary of Kansas was moved eastward to about the 102nd meridian.

In 1859 there was considerable effort on the part of the residents of Kansas living west of Denver in the mining camps to establish there the Territory of Jefferson. To the south, in the Pikes Peak region, later to center on Colorado Springs, the residents wanted the new territory to be called Colorado. In the end the Coloradans won but from 1859 to 1861 the advocates of the Territory of Jefferson were militant and used that name.

The first entomologist to visit the region was Thomas Say who accompanied Major Stephan H. Long to the Rocky Mountains in 1819–1820. His collections were stolen by a pair of packers on the return journey. The next generally accepted collector in the region is James Ridings of Philadelphia who visited the Denver region in 1864, a few years after Colorado became a territory. In 1866, Tryon Reakirt compiled the first list of Colorado butterflies upon the strength of Riding's collection and those in the hands of members of the Entomological Society of Philadelphia and in the Society cabinet.

A careful study of Reakirt's paper and of several earlier ones by William H. Edwards and others yields plenty of evidence that there were earlier collectors in the region than Ridings.

Two of these earlier Collectors, Winslow J. Howard and William S. Wood, Jr., were early members of the Entomological Society of Philadelphia. There is a suggestion that there was at least one other, but as yet I have no inkling who he was.

WILLIAM S. WOOD, JR.

According to Ewan (1950, p. 340), Wood was a member of the expedition led by Lieutenant F. T. Bryan, U. S. A., to scout a wagon road from Fort Riley, Kansas, to the Great Salt Lake over Bridger's Pass in 1856 and 1857. James Cooper, the ornithologist, was surgeon for this party. Hume (1942, p. 41) in his account of Cooper states that the party disbanded upon reaching the Rocky Mountains without fulfilling its mission.

There are three primary sources of information about the naturalists and collectors who accompanied the military expeditions of this era: The published reports of the War Department; those of the Smithsonian Institution; and, Prof. Spencer Fullerton Baird's fabulous correspondence files in the Smithsonian Institution. In the Annual Report of the Smithsonian Institution for 1856 (Baird, 1857, p. 64) is this entry: "Lieutenant F. T. Bryan, U. S. A., Six boxes, one keg containing alcoholic specimens, birds, mammals, and skeletons, from United States wagon-road to Bridger's Pass." There is no reference to insects collected. In the Report for the next year (Baird, 1858, p. 50) I found: "Lieutenant F. T. Bryan, U. S. A., Three boxes of zoological specimens collected by William S. Wood on the wagon-road expedition from Fort Riley to Bridger's Pass." On the following page acknowledgment is made of Cooper's material collected from Fort Laramie back to Independence, Missouri.

The earliest extant correspondence between Wood and Baird is a letter dated February 19, 1857. This is No. 221 in Baird's letter-press book for 1857. It reads:

"February 19, '57

"My dear Mr. Wood

"The wagon route you saw announced is not under charge of the War Dept. but under that of the Department of the

Interior. Lt. Bryan will not have charge of it. As soon as an opportunity presents itself however, I will try to find you a good place on one or other of the exploring parties. We shall know about them in about three weeks.

"I have deposited your eagle in the Mechanics Institute fair here, in your name, for competition as a specimen of taxidermy.

"Yours truly

ss/ Spencer F. Baird

"Wm. S. Wood
"Phila."

In a letter dated April 24, 1857, Baird offered Wood a post with Lt. Bryan. One dated July 12, 1857, and addressed to Wood at Fort Kearney, N. T. (Nebraska Territory), is ample evidence that Wood was on the 1857 field party but most likely not with the party in 1856. There is no evidence that Wood penetrated the area now included in Colorado while on the 1857 Bridger's Pass Wagon Road Expedition. His collections for that year in all probability were made along the Platte River in Nebraska, in eastern Wyoming, and around Fort Laramie.

In March 1859 there was an extended correspondence between Baird and Wood about the Landeges wagon road party bound for the Great Salt Lake and about Lt. Mullen's wagon road party exploring the route between Walla Walla, Washington, and Fort Benton, Montana. At this time Wood was living on Oak Street at the corner of Rose Street in West Philadelphia. Wood had been idle for some months and was anxious to get into the field on a collecting expedition. A letter from Wood dated March 28, 1859, told Baird that arrangements had been made to go west on a collecting trip for another group. Baird was so irate about this that he struck Wood from the rolls of field collectors for the Smithsonian and there is no further correspondence between the two.

The 1859 collecting trip to the west may well have been undertaken for the Entomological Society of Philadelphia. Both Charles J. Wood and William S. Wood are listed by Cresson (1909, p. 51) as "Organization Members" of the Society. They attended the meeting held on March 1, 1859, and

it was shortly after this that William Wood wrote to Baird telling him that he could not accept Baird's proposal since he had accepted a $60.00 advance to go west for another group.

Where did Wood go in 1859? Edwards in his description of *Colias Alexandra* (1863, p. 15) states: "From Pikes Peak; in the Society's collections; 6 males, 1 female. The second female is from the collection of Mr. George Newman and was taken among the Rocky Mountains, some years ago, by Mr. Wood." There are other similar citations that link "Mr. Wood" and "Rocky Mountains." There is no doubt in my mind that "Mr. Wood" is William S. Wood, Jr. In 1859 there was only one place that a person from the East not attached to a government party could use as a base for operations in the Rocky Mountains. That was the vicinity of Denver. There were several flourishing mining camps in the mountains connected with Denver City on the plains by wagon roads and good horseback trails. The settlement of Colorado City in the shadow of Pikes Peak was just forming and the chances that Wood visited it and not Denver are very slight. Bird specimens collected by Wood tie him to the Clear Creek area west of Denver. Travel was slow except to the mining camps west of Denver. With limited time and virgin territory, I am sure that Wood confined his travels to the region delimited by Denver, Golden, Empire and Central City in Colorado. All of his insect specimens were labelled "Rocky Mountains."

I have been unsuccessful in finding biographical material about Wood. He was the son of an Englishman, William S. Wood, who had leanings toward natural history. Mr. Wood, Sr., may have been a taxidermist. I know that he sent bird skins to the Smithsonian Institution (Baird, letter June 26, 1858). William, Jr., in addition to being a member of Lt. Bryan's expedition, was a member of the Naval Expedition to New Grenada, Colombia, under Lt. Muhler in 1857–1858. On this trip he was accompanied by his brother Charles. Another brother, Christopher, accompanied the Naval expedition to the Rio Plata in southern South America in 1858. I have no information about William, Jr., between 1859 and 1878 when he

was listed as a taxidermist in Wilmington, Delaware, first at 903 Market Street and later at 402 East 11th Street. He drops out of sight again after 1884 (Hindes, letter June 14, 1956). Frank Morton Jones, the dean of Delaware naturalists, was unable to give me any information to add to what I had.

WINSLOW J. HOWARD

It will be noted in Edwards' description of *alexandra* cited and in part quoted above is the locality "Pikes Peak." There are many specimens in the collections of the Entomological Society of Philadelphia that bear this label. I had been misled by Reakirt's article about Colorado butterflies and by references by Edwards in "Butterflies of North America" into thinking that Ridings was responsible for these captures. Since there are a number of citations of the locality in the literature before Ridings set out on his trip someone else must have collected the specimens.

I have found that some of these "Pike's Peak" specimens are credited to "Howard." The solution of the question of who "Howard" was is found in an article on Hymenoptera by Cresson (1863, p. 73) where in stating the type locality of *Masaris vespoides* he wrote: "Hab. Pike's Peak. Collected by Mr. Winslow J. Howard." The history of the American Entomological Society written by Cresson (1909) for its fiftieth anniversary includes among the members "Howard, W. I., Central City, Colo., March 10, 1862." As far as I know this makes Howard the earliest resident entomologist in Colorado.

Who was Howard? Ewan (1950, p. 235) notes very briefly that he sent some specimens of plants from Montana to Asa Gray at Harvard University in 1866. Dr. C. E. Kobuski (letter, April 13, 1956) could find no mention of Howard in the archives of the Gray Herbarium. In the literature of entomology there are scattered references to specimens collected by Howard outside of Colorado. These almost invariably place him in Prescott, Arizona, during the 1870s. Inquiries in Prescott drew a blank. Howard's constant association with mining camps led me to suspect that he was a mining engineer or at

least associated with that industry. He was, but in a most indirect way. Looking for information about him I ran into more blind alleys than I care to mention. At last in the Western History section of the Denver Public Library I struck pay-dirt.

While scanning the earliest newspapers printed in Colorado for mention of Howard's name I found in *The Western Mountaineer* for July 19, 1860, this article:

"Watches and Jewelry—We solicit your special attention to the advertisement of W. J. Howard, Esq., which appears in this issue. Mr. Howard was formerly in the leading establishment in his line on the continent—that of Messers Tiffany & Co., New York City—and we are able to assure our readers from personal knowledge that any work entrusted to him will be skillfully and properly done. He has a rare collection of the natural curiosities of the Rocky Mountains, which will be found very entertaining to those interested in natural science. Give Mr. Howard a call, and if you have any interesting specimens of the mineral wealth of the country, take them with you."

Although the newspaper quoted was published in Golden City, J. T. (Jefferson Territory), Howard's business was located on the east corner of Larimer and F Streets in Denver City. As late as December 20, 1860, Howard's advertisements appeared in *The Western Mountaineer*. We know that Howard gave Central City as his residence when he applied for membership in the Entomological Society of Philadelphia (later the American Entomological Society) in March 1862. Probably he moved there during the summer of 1861. In Central City he established Howard and Colony, manufacturing jewelers. The advertisements for this concern appear as late as January 4, 1865, in the daily *Rocky Mountain News,* the first newspaper published in Denver and still active.

Apparently Howard moved back East late in 1865. The February 27, 1866, issue of the *Rocky Mountain News* carried a note from a returning Coloradan that Howard was living in Brooklyn, New York, and had married. Howard returned to the West that autumn. The *Rocky Mountain News* for October 15, 1866, noted his arrival on the H. O. M. & Ex. Co.

stage from the East and that he registered at the Pacific House in Denver on the 14th. On the next page is this note: "W. J. Howard . . . collector of botanical, mineral and entomological specimens, called on us today. He arrived from the East by the last coach and goes on to Montana tomorrow." There my knowledge of Howard stops. I am anxious to get further information about the movements of both Wood and Howard in the West.

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Known Distribution of a Bat Flea, Nycteridopsylla chapini Jordan (Siphonaptera: Ischnopsyllidae)

By Robert E. Lewis, Department of Entomology,
University of Illinois

The brown bat flea, *Nycteridopsylla chapini* Jordan, is now known from several widely distributed areas of the United States east of the Great Plains. Originally it was described from Glen Echo, Maryland, by Jordan (1929). The type specimens were taken from the big brown bat, *Eptesicus fuscus* (Beau.), and were collected by R. C. Shannon in 1916. Vernon Bailey collected *N. chapini* from the Indiana bat, *Myotis sodalis* Miller and Allen, taken at Colossal Cave, Kentucky. M. W. Sanderson took *N. chapini* from the type host from a cave in Benton County, Arkansas. Lane (1953) noted the collection of a single female from the type host in Hocking County, Ohio, in 1951. The latest record is that of one male and four females collected by R. F. Myers from a male of the type host collected in Pulaski County, Missouri, in 1955.

This determination was confirmed by Dr. G. P. Holland, Department of Agriculture, Division of Entomology, Ottawa, Ontario, Canada, and one male and one female were deposited with him. Of the other three, two are housed in the collection of the Illinois Natural History Survey, and the remaining one is in the collection of the Department of Entomology, University of Wisconsin, Madison, Wisconsin.

Miller and Kellogg (1955) list the distribution of *Eptesicus fuscus fuscus* (Beau.) as: "Eastern North America, west approximately to longitude 102°W., from Quebec, Ontario and Manitoba south to northern Florida and Nuevo Leon, Mexico." If one considers the other eight subspecies of *Eptesicus fuscus* as well as the additional four species of the genus which occur in North and Central America, it seems reasonable to assume that further collections will extend the known range of this flea to the west. It is doubtless a much more common species than its presence in collections would indicate (Holland, 1956).

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Hermann Weber (1899–1956)

Professor Dr. Hermann Weber, a Corresponding Member of the American Entomological Society, died November 18, 1956, at Tübingen, Germany, a few days before his 57th birthday. Although without doubt one of the really important entomologists of the present century he was hardly known personally in this country. Dr. Weber apparently never visited America, although he did correspond with a number of American morphologists. From Dr. A. Glenn Richards, Entomological News learned of Weber's death, and from Dr. R. E. Snodgrass we were able to learn of his serious illness for the past year or more. Dr. O. A. Johannsen was able to tell us of a brief but pleasant visit at Weber's home in Danzig many years ago, and of their discussion of certain morphological problems.

From an examination of Kürschner's Gelehrten Kalender for 1954 we learned that Weber was born in Bretten, Baden, November 27, 1899, and that before coming to Tübingen in 1950 to become Professor and Director of the Zoologisches Institut of the University of Tübingen, he had taught at Bonn, Danzig, Freiburg, Münster, Wien, and Strasbourg. He was awarded the Fabricius Medal by the Deutsche entomologische Gesellschaft, was an Honorary Member of the Royal Entomological Society of London, and of the Österreichsche Akademie der Wissenschaften.

However meager our information regarding Weber as a person, we know a great deal of him as a scientist. He is perhaps best known as the author of the "Lehrbuch der Entomologie," (1933), generally considered the finest textbook of entomology ever written, despite the fact that the author was only 33 years old when it appeared. Quoting from Dr. Snodgrass' review, in Ent. News 44: 166–168: "The book is not only predominantly morphological in the sense that it deals largely with structure and the homologies of structural parts, but it is morphological from the viewpoint that anatomical form is an adaptation to function. In other words, the morphology of insects becomes a part of the biology of insects, as it properly should be. . . . The subject of insect morphology, as demonstrated by Dr. Weber's book, has now reached a stage in which it may rightly assert its ability to render the fundamental services that should be expected of it to the other branches of entomological science, particularly, in taxonomy and insect relationships, physiology, and ecology." And, we may add, this same approach to morphological studies is characteristic of Weber's other writings, that the structures are expressive of the life of the insect and necessarily tied to function and to ecology.

Another textbook, "Grundriss der Insektenkunde," appeared in 1938 and was intended as an introduction to entomology. The second edition and third edition were much enlarged, especially in areas in which research had progressed rapidly in recent years. This was desirable because the "Lehrbuch" of 1933 had been long out of print, and the work on a proposed revision still incomplete. The third edition (Gustav Fischer Verlag, Stuttgart, 1952) is noteworthy for the clear and concise accounts it gives of the recent work in the field of experimental embryology (Seidel, Bock, Krause), of the many studies on insect hormones, and of the work of Henke, Stossberg, Süffert, etc., on development of butterfly scales and wing pattern, and of many other matters otherwise available only in lengthy original papers.

Of great value also are Weber's review articles that appeared

in Fortschritte der Zoologie, in 1939 and 1942 (Vols. 4 and 9). In the latter he provides critical reviews of recent works dealing with the morphology, histology, and development of all articulates. In the first 31 pages he gives a complete and very clear discussion of the theories of head segmentation and comes to a series of conclusions as regards possibilities, but finds more information is necessary to provide a theory applicable to annelids as well as arthropods. In the same way, the thorax and abdomen are covered, and the histology and functioning of the various internal systems and organs.

Another large general work is the "Biologie der Hemipteren" (1930), regarding which we may again cite Dr. Snodgrass (Ent. News 41: 275–276): [It] ". . . is without question one of the best publications of recent times in biological entomology. Within it the writer brings together not only a review of all that has heretofore been written on the life and structure of the Hemiptera, but also the results of his own extensive and minute studies of the complex hemipterous mechanisms that for a century have baffled the skill of insect anatomists."

A glance through the Zoological Record for the years 1923 to 1953, shows that Weber also published a large number of research papers making up an additional 1500 odd pages in Zool. Jahrb. (Anat.), in Zeitschr. Morph. Okol. Tiere, in Zeitschr. vergl. Physiol., in Zool. Anz., and in other journals. These researches deal with the morphology of the head and thorax in various groups, as a contribution to general morphology, and with detailed investigations on the anatomy, particularly of the mouth parts, on the physiology of sucking, and on the sensory physiology of a number of homopterous species and the Anoplura.

Noteworthy is the important place Weber always assigned to ecological considerations. In his "Grundriss," the chapter on ecology occupies about one-fifth of the text. And finally, although essentially a morphologist, he also gave serious thought to fundamental theoretical aspects of systematics as exemplified in his article on "Grenzen in der Biologie," in Vol. 5 of Studium Generale. Here is a discussion on the possibilities of drawing definite boundaries in the course of our research and thinking.

After much philosophical argument he concludes, e.g., that systematics cannot exist by itself, but that ecological, population, behavior, genetic, and especially population-genetic studies must go hand in hand with it if we are to discover the reasons for the existence or non-existence of boundaries between populations. Also, the animal and its environment must be considered as a unit, and the variability of the environment compared with the variability of the animal. If one does not thus arrive at precise definitions and limits, one nevertheless has a truer picture of reality. In the study of colonies, social groups, societies, mixed populations, and biomes the defining of boundaries is even more difficult. As a result, physicists and professional philosophers may conclude that biology is an inexact science. Weber's point of view was that where sharp boundaries exist we do well to define them, but where they do not, where transitions are fluid or series continuous, precise delimitation would really make biology inexact, would not present a true picture.

In sum, Hermann Weber contributed a great deal towards our present knowledge of the morphology and functional anatomy of insects, particularly of the Hemiptera and Anoplura. He was also thoroughly conversant with most other aspects of entomological science so that by means of his text-books, and his monographic reviews on morphology, histology, and development he earned the gratitude of teachers and investigators over the world by providing them with such reliable accounts of the present state of knowledge. His untimely death is truly a great loss to entomology.

R. G. SCHMIEDER.

Review

A MORPHOLOGICAL STUDY OF A RELIC DRAGONFLY EPIOPHLEBIA SUPERSTES SELYS. By Syoziro Asahina. The Japan Society for the Promotion of Science, Tokyo, 1954. iv + 153 pp., 71 pl. [Maruzen Co. Nihonbashi, Tokyo, $5 (U. S.)]

Epiophlebia superstes, a species somewhat zygopteroid and anisopteroid but essentially unique, is the subject of a painstaking morphological analysis by Syoziro Asahina. Dr. Asahina, along with his colleagues, has given us over the past years considerable information on the ecology and life history of this interesting Japanese species which is attaining thereby the status of one of the most completely known Odonata. Turning his attention now to more critical matters the author introduces evidence from comparative anatomy to facilitate settling the long-standing problem of the affinity of *Epiophlebia* to the recent two great suborders. He also succeeds in another aim of his study, namely, "to bring forward some rather neglected problems of Odonata structure in the light of recent progress on insect morphology."

The gomphine *Davidius nanus* Selys and the calopterygine *Mnais strigata* Selys are anatomically compared from the viewpoint of homology to both larval and imaginal *Epiophlebia superstes* with special reference to sclerites, muscles and several internal organs. Comparisons with other Odonata and with generalized insects (according to the interpretations of Ferris and Snodgrass) add to the significance of this study and to the weight of evidence in favor of the author's conclusions. This detailed comparative anatomy occupies over three-quarters of the text and is supplemented by more than 200 figures.

Into his review of the chronology of opinion on the systematic position of *Epiophlebia* the author adeptly dovetails the progress in understanding of odonate phylogeny. He relates that Selys placed *Epiophlebia* in the Zygoptera; Needham and Tillyard did likewise in their earlier studies but Needham later shifted the genus to the Anisoptera whereas Tillyard subsequently placed it in Handlirsch's Anisozygoptera, the suborder which flourished during the Mesozoic era; Schmidt and Fraser also hold to

Anisozygoptera placement. Because of the identical nature of the discoidal cells in both pairs of wings, Carpenter is of the opinion that a new suborder is probably necessary to accomodate this relic species. Although seeming to be in considerable sympathy with Carpenter's viewpoint, Asahina is of the opinion that the Anisozygoptera affinities of *Epiophlebia* are quite close based on wing venation characters alone. He goes only so far as to separate the Epiophlebiidae from the remaining fossil families of Tillyard and Fraser's Heterophleboidea by proposing a new superfamily, Epiophleboidea; he considers it advisable to limit the fossil Anisozygoptera to the Liassic forms represented by the Heterophleboidea and he suggests that the only known Tertiary Anisozygoptera, Sieblosiidae of Oligocene times, might be a true Zygoptera.

Evolutionary tendencies of certain morphological features, particularly the wings, are discussed with regard to the three suborders. Asahina significantly concludes that the superfamily Epiophleboidea [was] "established from a narrow-winged ancestor before the families of Heterophleboidea appeared and advanced along its own evolutionary passage toward the direction of Anisoptery . . . it has arrived, in the present day, at a state where the body structure, especially the larval shape, has attained nearly to a complete Anisopteric stage."

Dr. Asahina's lucid style has occasional refreshing oriental phraseology; the comparative morphological approach appears to be fundamentally sound in the choice of materials; his conclusions are not so far-reaching as one might have anticipated but are nevertheless well documented. The arrangement of the figures is sometimes awkward since they do not always read from top to bottom or from left to right and there are one or two omissions of figure references on the plates; although not of the usual high oriental standard the figures are wholly sufficient for the author's purpose.

This is a most notable and significant contribution to the literature on Odonata and to a broader-based understanding of phylogenetic relationship within this group.—EDWARD J. KORMONDY

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COTT, H. E. Systematics of the Suborder Tubulifera (Thysanoptera) in California. University of California Publications in Entomology. Vol. 13, pp. 210, pls. 1–4, 1956. Price: $3.50.

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MELLAN, I. and E. Dictionary of poisons. Pp. 150. Philosophical Library, N. Y. Price $4.75.

MILLER, N. C. E. The biology of the Heteroptera. Pp. x + 162, 4 pls. and 64 text-figs. Leonard Hill Books Ltd., 9 Eden St., London N.W.1, 1956. Price: 30 s. net.

Ross, H. H. Evolution and classification of the mountain caddisflies. Pp. vi + 312; 370 figs., 45 charts. University of Illinois Press, Urnana, Ill.

Ross, H. H. A textbook of entomology. 2nd ed. Pp. x + 519, 402 figs. John Wiley and Sons, Inc., 1956. Price: $7.75.

SKAIFE, S. H. Dwellers in darkness. An introduction to the study of Termites. Pp. x + 134; 40 figs., 14 plates. Longmans Green and Co., London, New York, Toronto, 1955. Price: 30 s. net.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleign, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Tenebrionidae of the World wanted, in exchange for insects of Argentina and neighboring countries. Horacio J. Molinari, Av. Lib. Gral. San Martin 55, Acassuso (Buenos Aires), Rep. Argentina.

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By Philip P. Calvert

This paper presents an account of the Neotropical species referred by de Selys in 1883 to his subgenus *Aeschna* and of some species unknown to him. His subgenus is here divided into three genera, *Aeschna, Coryphaeschna,* and *Castoraeschna, Aeshna* in its turn being subdivided into the subgenera *Aeschna, Hesperaeschna, Rhionaeschna, Schizuraeschna, Marmaraeschna* and *Neureclipa.* These five subgenera include 2, 15, 1, 3, 4 and 5 species and subspecies respectively. *Coryphaeschna* embraces 9 species and subspecies, *Castoraeschna* 5. Larvae of 2 species of *Hesperaeschna,* 1 species of *Schizuraeschna,* 1 species of *Neureclipa* and 6 species of *Coryphaeschna* are described and figured. Generalities are discussed under the headings: Relationships of the Neotropical Aeshnas to the North American fossils; Relations of the South American Aeshnas to the Palaearctic and Australian species; The geological age and geographical distribution of the ancestors of the Odonata and of the Mammalia; Relations of the Neotropical Aeshnas to each other; The seasonal distribution of the Neotropical species of Aeshna. Forty plates in black and white illustrate the structural and colorational features of the adults, seven those of the larvae. Nineteen tables show the variations in size and in venation of the adults. Six maps show the geographic distribution of all the species concerned. There is an alphabetical index of species, subgenera, genera, authors quoted, and topics.

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